Vargas does not teach or disclose a system that permits the entire word to be entered, with targeting errors on some or all letters, and still allows the user to choose the correct word at the end. In Vargas, each letter must be corrected manually before proceeding to the next one, if either the user taps directly on the wrong letter or the bi-gram/tri-gram adjustment algorithm doesn't select the intended letter.

Vargas does not teach or disclose a system that offers one or more word completions (which Vargas terms "word predictions") that are correct even if one of the initial letters entered is not correct.

Vargas does not teach or disclose a system that maintains a "current input sequence of contact locations." In Vargas, each contact location is converted to an explicit character before the next contact location is received from the user and processed.

Vargas does not teach a system that adjusts the promotion value of the entire word relative to the use of other words (even the word completions/predictions) as each word is entered and selected. In Vargas, the promotion value of each letter, in context of the preceding 1-2 letters, is incremented upon its uncorrected entry.

Claim 1 appears as follows (note that Claim 1 has been amended to correct a typographical error, as indicated in the Replacement Claims attached hereto):

1. A text entry system comprising:

(a) a user input device comprising an auto-correcting keyboard region comprising a plurality of the characters of an alphabet, wherein each of the plurality of characters corresponds to a location with known coordinates in the auto-correcting keyboard region, wherein each time a user interacts with the user input device within the auto-correcting keyboard region, a location associated with the user interaction is determined and the determined interaction location is added to a current input sequence of contact locations;

(b) a memory containing a plurality of objects, wherein each object is further associated with a promotion value, and wherein each of the plurality of

objects in memory is further associated with one or a plurality of predetermined associated groupings of objects;

(c) an output device with a text display area; and

(d) a processor coupled to the user input device, memory, and output device, said processor comprising:

(i) a distance value calculation component which, for each determined interaction location in the input sequence of interactions, calculates a set of distance values between the interaction locations and the known coordinate locations corresponding to one or a plurality of characters within the auto-correcting keyboard region;

(ii) a word evaluation component which, for each generated input sequence, identifies one or a plurality of candidate objects in memory, and for each of the one or a plurality of identified candidate objects, evaluates each identified candidate object by calculating a matching metric based on the calculated distance values and the promotion value associated with the object, and ranks the evaluated candidate objects based on the calculated matching metric values;

(iii) a selection component for identifying one or a plurality of candidate objects according to their evaluated ranking, presenting the identified objects to the user, and enabling the user to select one of the presented objects for output to the text display area on the output device; and

(iv) a promotion component for setting a relative promotion value associated with each object in memory as a function of the user interaction with said plurality of objects.

With regard to the limitations of Claim 1, Vargas does not teach or disclose a system that provides a memory containing a plurality of objects, wherein each object is further associated with a frequency of use, and a word evaluation component which, for each generated input sequence, identifies one or a plurality of candidate objects in memory, and for each of the one or a plurality of identified candidate objects, evaluates each identified candidate object by calculating a matching metric based on the calculated

distance values and the frequency of use associated with the object, and ranks the evaluated candidate objects based on the calculated matching metric values, as claimed in the invention. Vargas does not teach, disclose, or contemplate such a system. Vargas teaches away from such a system by teaching that characters, not words, are stored in data tables for determining the occurrence frequency of the next character (col. 1, line 62-col. 2, line 12, Fig. 1).

Further, Vargas does not teach or disclose a system that provides a selection component for identifying one or a plurality of candidate objects according to their evaluated ranking, presenting the identified objects to the user, and enabling the user to select one of the presented objects for output to the text display area on the output device as claimed in the invention. As noted above, Vargas teaches that at the time each new input character is entered, a database is queried to determine if it exists in a history array. Col. 10, lines 25-31 state:

> "Each time a new input character is entered, the database is queried, using the calculated address, to determine if a valid position for the history array has been stored at the calculated address. If a valid position for the text history array has been stored at the calculated database address, this indicates that the character sequence has previously occurred in the history array."

Vargas does not teach, disclose, or contemplate that candidate objects are identified and presented to a user for the user to select one of the presented objects as claimed in the invention.

Further, Vargas does not teach or disclose a system that provides a memory containing a plurality of objects, wherein each object is further associated with a frequency of use, and wherein each of the plurality of objects in memory is further associated with one or a plurality of predefined groupings of objects as claimed in the invention.

Thus, applicant's "plurality of objects...associated with a frequency of use" are words, while Vargas is concerned with characters.

Vargas does not teach or disclose predefined groups of objects. Col. 8, lines 3-21 state:

> "In another embodiment of the invention, the occurrence frequency for each of the characters under consideration is enhanced by using a word prediction algorithm that is running in the background and constantly predicting the next word. When the word prediction algorithm predicts that the next character is one of the three characters under consideration, the occurrance frequency for that character is increased by a predetermined percentage, preferably 5%, before the frequency percentage and the frequency value for each of the characters is divided by the distance between the contact point and the center point for each of the proximate keys. The word prediction algorithm may be any one of a number of word prediction algorithm's including MAC (Mac-Apple Communicator), PAL (Predictive Adaptive Lexicon), PACA (Portable Anticipatory Communication Aid) and the prediction algorithm of the Reactive Keyboard. It is, however, preferred that the word prediction algorithm be the method set forth in the following section."

Vargas uses an occurrence frequency for each of the characters under consideration which is enhanced by using a word prediction algorithm. Vargas mentions several word prediction algorithms, *i.e.* MAC (Mac-Apple Communicator), PAL (Predictive Adaptive Lexicon), PACA (Portable Anticipatory Communication Aid) and the prediction algorithm of the Reactive Keyboard. These word prediction algorithms predict words without the use of predefined groupings of objects.

PAL (Predictive Adaptive Lexicon) is a word processing program with word prediction that continues until either a prediction is selected or a word is entered fully. A major emphasis of the PACA program is the use of anticipatory (predictive) algorithms, which on the average reduce the number of scanning steps and switch activations needed to create a message. The reactive keyboard prediction algorithm uses a statistical, variable-length model of character sequences to predict the most probable sequence of following characters. In contrast to word completion, the predictions are made across

word and sentence boundaries.

Vargas' preferred word prediction method is a word matching algorithm that is described in col. 9, lines 61-67:

> "The information retrieval prediction module implements a "best match prediction" module that locates the longest sequence of characters duplicated in the history array that matches the input sequence. The information retrieval prediction module also implements a "most recently used" prediction module that finds the most recently entered match for the input text."

Vargas, therefore, does not teach every aspect of the invention either explicitly or impliedly.

Independent Claim 1 is in allowable condition. Claims 2 and 3 are dependent upon Claim 1 and therefore allowable as well.

Claims 4 and 5 follow:

4. A text entry system comprising:

(a) a user input device comprising an auto-correcting keyboard region comprising a plurality of the characters of an alphabet, wherein each of the plurality of characters corresponds to a location with known coordinates in the auto-correcting keyboard region, wherein each time a user interacts with the user input device within the auto-correcting keyboard region, a location associated with the user interaction is determined and the determined interaction location is added to a current input sequence of interaction locations;

(b) a memory containing a plurality of objects, wherein each object is further associated with a promotion value, and wherein each of the plurality of objects in memory is further associated with one or a plurality of predefined groupings of objects;

(c) an output device with a text display area; and

(d) a processor coupled to the user input device, memory, and output device, said processor comprising:

(i) a distance value calculation component which, for each generated key activation event location in the input sequence of key activation events, calculates a set of distance values between the key activation event location and the known coordinate locations corresponding to one or a plurality of keys within the auto-correcting keyboard region;

(ii) a word evaluation component which, for each generated input sequence, identifies one or a plurality of candidate objects in memory, and for each of the one or a plurality of identified candidate objects, evaluates each identified candidate object by calculating a matching metric based on the calculated distance values and the promotion value associated with the object, and ranks the evaluated candidate objects based on the calculated matching metric values;

(iii) a selection component for identifying one or a plurality of candidate objects according to their evaluated ranking, presenting the identified objects to the user, and enabling the user to select one of the presented objects for output to the text display area on the output device; and

(iv) a promotion component for setting a relative promotion value associated with each object in memory.

5. A text entry system comprising:

(a) a user input device comprising an auto-correcting keyboard region comprising a plurality of the characters of an alphabet, wherein each of the plurality of characters corresponds to a location with known coordinates in the auto-correcting keyboard region, wherein each time a user interacts with the user input device within the auto-correcting keyboard region, a location associated with the user interaction is determined and the determined interaction location is added to a current input sequence of contact locations;

(b) a memory containing a plurality of objects, wherein each object is a string of one or a plurality of characters forming a word or a part of a word, wherein each object is further associated with a frequency of use;

(c) an output device with a text display area; and

(d) a processor coupled to the user input device, memory, and output device to receive user input, said processor comprising:

(i) a distance value calculation component which, for each determined interaction location in the input sequence of interactions, calculates a set of distance values between the interaction locations and the known coordinate locations corresponding to one or a plurality of characters within the auto-correcting keyboard region;

(ii) a word evaluation component which, for each generated input sequence, identifies one or a plurality of candidate objects in memory, and for each of the one or a plurality of identified candidate objects, evaluates each identified candidate object by calculating a matching metric based on the calculated distance values and the frequency of use associated with the object, and ranks the evaluated candidate objects based on the calculated matching metric values; and

(iii) a selection component for identifying one or a plurality of candidate objects according to their evaluated ranking, presenting the identified objects to the user, and enabling the user to select one of the presented objects for output to the text display area on the output device.

The discussion above with regard to Claim 1 applies likewise to Claims 4 and 5.

Independent Claim 5 is in allowable condition. Claims 6 and 18 are dependent upon Claim 5, and therfore allowable as well.

Therefore, Applicant respectfully requests that the Examiner withdraw the rejection under 35 U.S.C. §102(b).

3. 35 U.S.C. § 103(a). The Examiner has rejected Claims 7, 9, and 10 under 35 U.S.C. §103(a) as being unpatentable over Vargas in view of Ragueso (5,784,008).

Ragueso does not have an auto-correcting region, nor does it have interaction locations. Rather, Ragueso is concerned with measuring the relative difficulty of typing a word by determining the distance between successive characters in the word by static

computations, in contrast to Applicant's teaching of using the distance between the predetermined word's character locations and the user's dynamic interaction locations each time he types the word. Ragueseo happens to use a Cartesian-like coordinate system on a standard PC keyboard. Ragueso is not concerned with auto-correcting and the person skilled in the art would not have reason to consider Ragueso when solving the problem to which the claimed invention is directed. As such, Ragueso is irrelevant because it is non-analogous and unrelated art. Accordingly, the combination of Ragueso and Vargas is not proper.

4. 35 U.S.C. § 103(a). The Examiner has rejected Claim 8 under 35 U.S.C. §103(a) as being unpatentable over Vargas in view of Gallant (5,317,507).

Applicant cannot see the relevance of Gallant to the claimed invention. Gallant is directed to a document retrieval system, not an auto-correcting keyboard. The person skilled in the art would have no reason to consider Gallant when solving the problem addressed by the claimed invention. As such, Galant is irrelevant because it is non-analogous and unrelated art. Accordingly, the combination of Gallant and Vargas is not proper.

5. 35 U.S.C. § 103(a). The Examiner has rejected Claims 11-15 and 17 under 35 U.S.C. §103(a) as being unpatentable over Vargas in view of Goldwasser (4,559,5984,891,786).

The rejection of Claims 11-15 and 17 under 35 U.S.C. §103(a) is deemed moot in view of Applicant's comments concerning Claim 5, above. Claims 11-15 and 17 are dependent upon Claim 5, which is in allowable condition. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection under 35 U.S.C. §103(a).

6. 35 U.S.C. § 103(a). The Examiner has rejected Claim 16 under 35 U.S.C. §103(a) as being unpatentable over Vargas in view of Goldwasser (4,891,786).

The rejection of Claim 16 under 35 U.S.C. §103(a) is deemed moot in view of Applicant's comments concerning Claim 5, above. Claim 16 is dependent upon Claim 5, which is in allowable condition. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection under 35 U.S.C. §103(a).

CONCLUSION

Based on the foregoing, Applicant considers the claimed invention to be distinguished from the art of record. Accordingly, Applicant earnestly solicits the Examiner's withdrawal of the rejections raised in the above referenced Office Action, such that a Notice of Allowance is forwarded to Applicant, and the present application is therefore allowed to issue as a United States patent.

Respectfully Submitted,

Michael A. Glenn
Reg. No. 30,176

Customer No. 22862